Withholding Thrombolysis in Patients with Diabetes Mellitus and Acute Myocardial Infarction

K. Shotliff*[1], R. Kaushal[1], D. Dove[2], S.S. Nussey[1]

[1]*Division of Gastroenterology, Endocrinology and Metabolism, St George's Hospital Medical School, London, UK*
[2]*Department of Medicine, St Helier Hospital, Carshalton, Surrey, UK*

The benefits of thrombolytic therapy in a patient with diabetes having a myocardial infarction are now well accepted but this treatment may be withheld inappropriately because of concerns about retinal haemorrhage. We therefore examined whether junior doctors alter their use of thrombolysis for the treatment of acute myocardial infarctions according to the type of diabetic retinopathy present. A questionnaire asking whether thrombolysis would be given to a 50-year-old male smoker with insulin-treated diabetes and an acute anterior MI was shown, with four unlabelled retinal photographs, to all doctors prescribing thrombolytic therapy in a south London teaching hospital and an affiliated district general hospital. In all, 24 medical SHOs, 16 medical registrars/specialist registrars, 3 medical senior registrars, and 23 casualty SHOs were interviewed. Of these 89 % would thrombolyse such a patient with normal fundi, 55 % with background diabetic retinopathy, 54 % if this also involved the macula, and 26 % if they saw proliferative retinopathy. The more senior grades were more aggressive in their approach. As we believe that all patients with an acute anterior myocardial infarction and diabetes should be considered for thrombolysis irrespective of their retinal appearance these results suggest thrombolytic therapy is being withheld inappropriately. © 1998 John Wiley & Sons, Ltd.

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Introduction

Diabetes mellitus remains a significant risk factor for both early and late mortality after acute myocardial infarction (MI),[1–5] with nearly twice the in-hospital mortality and a greater incidence of pulmonary oedema in diabetic than in non-diabetic patients.[2,4] Thrombolytic therapy has proven benefit in diabetic patients[4,6] but may be withheld as diabetic retinopathy or recent laser photocoagulation are still quoted as relative contraindications.[7] As the risk of intraocular haemorrhage is believed to be very small it has been suggested that all patients with diabetes having an acute MI should be considered suitable for thrombolysis, whatever fundoscopy reveals.[6,8] Most consultant diabetologists replying to a postal questionnaire, however, withhold thrombolytic therapy in patients with proliferative retinopathy.[9] A more recent postal survey of junior doctors in Scotland showed that over three-quarters used the presence of diabetic retinopathy as an absolute contraindication but did not state the type of retinopathy to which this related.[10] We have studied whether junior doctors alter their use of thrombolysis according to the type of diabetic retinopathy present.

Method

All post-registration general medical and geriatric junior hospital doctors present in two hospitals were contacted over a 5-day period in January 1997, with any new doctors arriving after that date contacted in the first week of February. House officers (first year post qualifications) were excluded, as it is hospital policy that they should not initiate thrombolytic therapy unsupervised. Three months later, over a 3-day period, all senior house officers (SHOs) in the accident and emergency department (A&E) were interviewed in the same way. We included 19 medical SHOs, 14 medical registrars, 2 senior registrars, and 20 A&E SHOs in the former and 5 SHOs, 2 registrars, 1 senior registrar and 3 A&E SHOs in the latter. Two hospitals were examined, a teaching hospital and an affiliated district general hospital.

Each clinician was first asked whether they examined the fundi of patients with diabetes having an acute MI prior to initiating thrombolysis. They were then asked whether they would give thrombolytic therapy to a 50-year-old male smoker with insulin-treated diabetes, 4 h of central chest pain, and an ECG showing an acute full thickness anterior MI and specific ophthalmoscopic

* Correspondence to: Dr Kevin Shotliff, Division of Gastroenterology, Endocrinology and Metabolism, 2nd Floor, Jenner Wing, St George's Hospital Medical School, Cranmer Terrace, London SW17 0RE, UK

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findings. They were shown four unlabelled retinal photographs (6″ × 4″): (a) a normal fundus, (b) background diabetic retinopathy (BDR) with no macular involvement, (c) BDR with macular involvement, and (d) obvious new vessels on the disc.

Statistical Analysis

Statistical analysis using χ^2 for comparison between groups was carried out using SPSS for windows version 6.0 (SPSS Inc., USA).

Results

A 100 % response rate was obtained. Eighty-three per cent (54/65) of doctors asked said they would examine the fundi of a diabetic patient admitted with an acute MI. Those who stated they would not were asked why. Most reported a lack of confidence in their ability to detect an abnormality as the main reason but one stated the examination would not alter management. Eighty-nine per cent (58/65) would thrombolyse a 50-year-old male smoker with diabetes and an acute anterior MI if the fundi were normal, 55 % (36/65) if BDR were present, 54% (35/65) if BDR and macular involvement were seen and 26 % (17/65) if proliferative retinopathy were visible. A comparison between grades of seniority of physician is shown in Figure 1; no significant differences were found between the medical and casualty SHOs for any grade of retinopathy examined.

Discussion

The majority of patients with diabetes will die from coronary heart disease. Up to a quarter of patients admitted to our coronary care unit can be expected to have diabetes because of the age and ethnic mix of our local population. Thirty-seven lives are saved per 1000 treated with thrombolytic agents when treating a diabetic

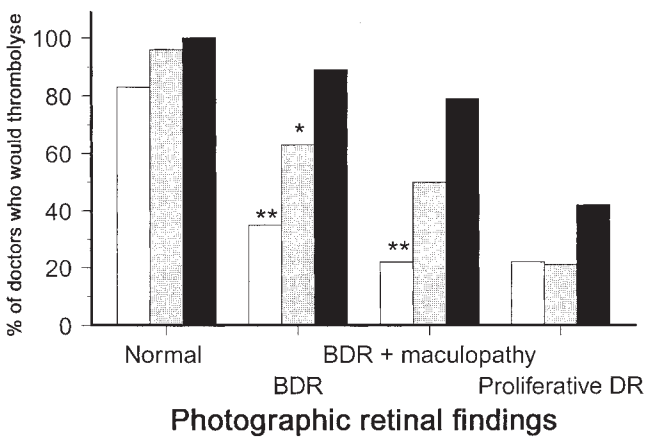

Figure 1. Proportion of junior hospital doctors who would give thrombolytic therapy to a 50-year-old male smoker with an acute anterior MI, insulin-treated diabetes, and different degrees of diabetic retinopathy. (Comparing A&E SHOs □ and medical SHOs ▨ with medical senior registrars/registrars ■ with χ^2, $*p < 0.05$, $**p < 0.01$)

population compared to 17/1000 among non-diabetic patients.[11] There is, therefore, the potential to significantly improve the morbidity and mortality of this high risk group with a comprehensive thrombolytic policy.[8]

The presence of diabetic retinopathy is still quoted as a relative contraindication or caution to thrombolytic therapy in patients with diabetes and an acute MI.[7] Recent reviews of the literature, predominantly case reports and thrombolytic trials, suggest the risk of retinal haemorrhage in this situation is very small.[6,8] The 6011 patients with diabetes in the GUSTO trial showed no significant retinal problems and reinforces this. It should be remembered, however, that there may be selection bias in the patients included in such trials, often excluding patients at greater risk of complications. Postal questionnaire studies of both junior Scottish doctors[10] and more senior UK diabetologists[9] suggest a tendency to withhold thrombolytic therapy in patients with diabetic retinopathy. The lack of reports of post-thrombolytic haemorrhage in the literature should, therefore, be viewed with this potential bias in mind. Before withholding thrombolytic therapy completely, the presence of a case report suggesting vitrectomy as an effective treatment when intraoccular haemorrhage does occur gives room for some optimism.[12]

While most UK diabetologists withhold thrombolytic therapy only in patients with proliferative retinopathy more junior staff also appear to withhold it in patients with milder disease. We, and many others, believe this is incorrect practice.[8] Accident and emergency SHOs are more worrying as a significant proportion of them did not wish to initiate treatment in patients with normal fundi. When asked why, they suggested a lack of confidence in detecting an abnormality as their main reason. All the SHOs who would not treat normal fundi would, however, ask for a second opinion in any diabetic patient before initiating thrombolysis. Thus they may delay rather than prevent therapy.

We are unaware of any data that would refute our argument that a 50-year-old male smoker, with proliferative diabetic retinopathy, who is having an acute anterior MI should receive thrombolytic therapy. In our hospitals, 42 % of medical registrars and senior registrars would thrombolyse such a patient compared to 17 % of UK diabetologists who would also treat patients with any form of retinopathy.[9]

As the majority of all grades withhold thrombolytic therapy in some diabetic patients there does appear to be concern about the potential risks of this therapy. In the light of this, we reiterate the need for an accurate assessment of vitreous haemorrhage risk post-thrombolysis.[13] Currently, the policy on thrombolysis appears to be based on speculation or personal preference.

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